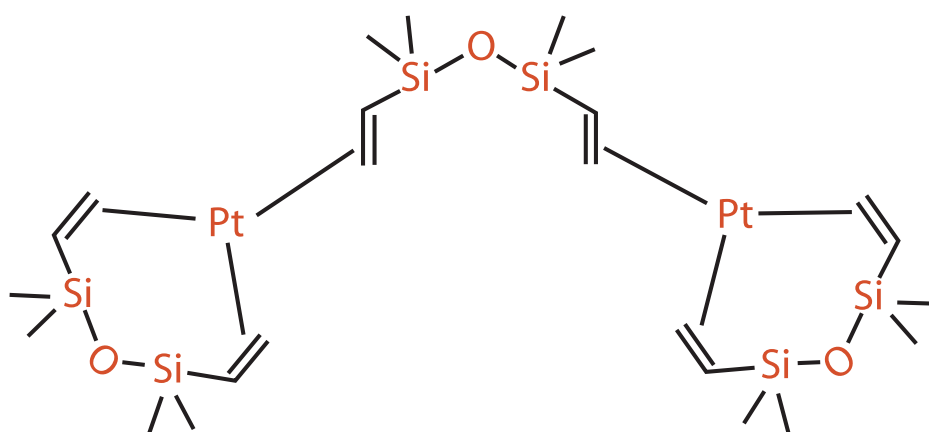


Homogeneous Platinum Catalysts



Corporate Headquarters In Bristol, Pennsylvania



Mission Statement

United Chemical Technologies has embarked on a quest: Innovation Through Silicon Chemistry. As a primary manufacturer of specialty silanes, silicones and organosilicas, UCT strives to apply its well developed technologies to provide the highest quality products and services to research, development and manufacturing market segments. It is our intention to supply these products at competitive prices with prompt delivery and excellent technical support. It is also our goal to continuously develop new and creative products for our customers' future market driven requirements.

Platinum Catalysts by John H. MacMillan Ph.D.

Our platinum catalysts are **homogeneous**, i.e. they dissolve in the reaction medium. They are preferable to **heterogeneous**, i. e. insoluble catalysts, in that homogeneous catalysts **do not depend on irregular surface effects for their activity**.

Advantages of Hydrosilylation Cure Systems over...

Condensation Cure (Tin and Zinc catalyzed) Systems

- Wider range of curing temperatures: room to $> 100^{\circ}\text{C}$
- Lower catalyst concentrations (5-30 ppm vs. 100-300 ppm)
- No volatile byproducts
- Smoother reaction profiles

Peroxide Cure Systems

- Lowest cure temperature possible
- No acidic byproducts
(e.g., benzoic acid from benzoyl peroxide cure)
- No “frothing” from oxygen byproduct
- No oxidative degradation of cured elastomer

Chloroplatinic Acid: H_2PtCl_6

- Homogeneous
- Much higher reactivity
- Reactivity can be fine tuned by choice of solvent and inhibitor
- No corrosive HCl or chloride byproducts.

PETRARCH® Platinum Catalysts

Part
Number

Minimum
Weight % Platinum

Platinum Divinyl Complex, 10% platinum concentration in divinyl tetramethyldisiloxane, Neutral

Lower reactivity, for high temperature (>100 °C) extruded silicone formulations.

PC065

10% Pt

Platinum Divinyl Complex, 1-3% platinum concentration in xylene, Neutral

Highest reactivity, for room temperature addition cure.

PC072

2% Pt

PC072.3

3% Pt

PC073

1% Pt

Optically Clear, Highest reactivity, for applications where cured silicones require High transparency.

PC074

2% Pt

Platinum Divinyl Complex, 2% platinum concentration in octamethylcyclotetrasiloxane, Neutral, Colorless

Low viscosity solvent, high reactivity.

PC074.5

2% Pt

Platinum Divinyl Complexes, 1-10% platinum concentration in vinyl terminated polydimethylsiloxane, Neutral

Intermediate reactivity, useful for slow room temperature cures and moderate (30-100 °C) higher temperature cures.

PC075

2% Pt

PC075.3

3% Pt

PC075.5

5% Pt

PC076

1% Pt

Intermediate reactivity, lower viscosity vinyl fluid carrier and higher platinum content allow more facile additions of small quantities of catalyst to formulation batches.

PC075.7

10% Pt

Platinum Cyclovinyl Complexes, 1-3% platinum concentration in cyclic vinylmethylsiloxanes, Neutral

Lower reactivity, for high temperature (>100 °C) extruded silicone formulations.

PC085

2% Pt

PC085.3

3% Pt

PC086

1% Pt

Lower reactivity, for high temperature (>100 °C) extruded silicone formulations.

PC087

1.75% Pt

Platinum Octanol / Octanal Complexes, 2-3.5% platinum concentration in Octanol / Octanal

Low reactivity, for high temperature (>100 °C) extruded silicone formulations.

Useful as fire retardant in silicone resins.

PC088

3.5% Pt

PC088.3

2% Pt

USE THESE PETRARCH® PRODUCTS WITH OUR CATALYSTS...

Hydrosilicones

Polymethylhydrosiloxane, Trimethylsilyl Terminated

Part#	Viscosity	Mole% Methyl Hydro	Specific Gravity	Refractive Index	Flash Point	Uses
PS118	2-5	100%	0.90	1.382	50	Blowing Agent Crosslinkers
PS119	20	100%	0.99	1.395	100	
PS120	30	100%	0.99	1.396	121	
PS122	85	100%	0.99	1.397		

Methyl Hydro, Dimethylsiloxane Copolymer, Trimethylsilyl Terminated

Part#	Viscosity	Mole% Methyl Hydro	Specific Gravity	Refractive Index	Flash Point	Uses
PS122.5	10-15	(50-55%)	0.99	1.394	70	RTV Crosslinkers for addition cure Pt catalyzed systems
PS123	25-30	(30-35%)	0.99	1.399	125	
PS123.5	25-35	(15-18%)	0.99	1.400		
PS123.8	7.5K ± 2.5K	(0.5-1.0%)	0.97	1.404	300	
PS124.5	250-275	(3-4%)	0.97	1.404		

Vinyl Fluids

Polydimethylsiloxane, Vinyl dimethyl Terminated

Part#	Viscosity	Weight % Vinyl	Specific Gravity	Primary Use in RTV Addition Cure Systems
PS437	2-3	10-12	0.919	Cure moderators or as an inhibitor
PS438	4-6	7-9	0.93	
PS441	100	0.8-1.2	0.97	Base polymers, or part of a polymer blend of liquid RTV systems
PS441.2	200	0.4-0.6	0.97	
PS442	500	0.37-0.43	0.97	
PS443	1000	0.18-0.26	0.97	High strength RTV systems
PS444	5000	0.10-0.13	0.97	
PS445	10,000	0.08-0.12	0.97	
PS447.6	65,000	0.03-0.07	0.97	
PS448	100,000	0.054	0.97	Main polymers for High Consistency RTV systems
PS448.5	165,000	0.03-0.04	0.97	
PS449	600,000	0.01	0.98	
PS449.5	1,000,000	0.01-0.02	0.98	

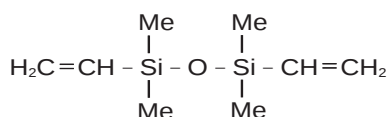
Polydimethylsiloxane, Monovinyl, Mono n-Butyldimethyl Terminated

Part#	Viscosity	Weight % Vinyl	Specific Gravity	Primary Use in RTV Addition Cure Systems
PS491	10,000	0.05-0.1	0.98	Peroxide or Pt cure, Grafting Agent

Vinyl Q-resin Dispersion

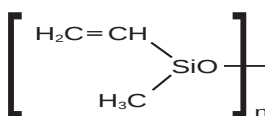
Part#	Viscosity	Weight % Vinyl	Specific Gravity	Primary Use in RTV Addition Cure Systems
PS496	4000-6000		1.02	High strength RTV systems, Reinforcer

Inhibitors



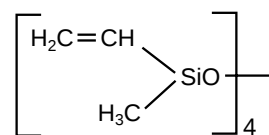
D6210

1,3-Divinyltetramethyl-
disiloxane



PS925

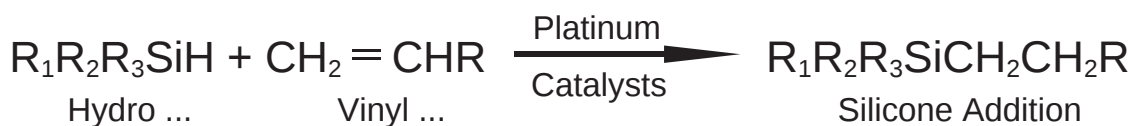
Cyclic Vinyl
Methyl Siloxanes



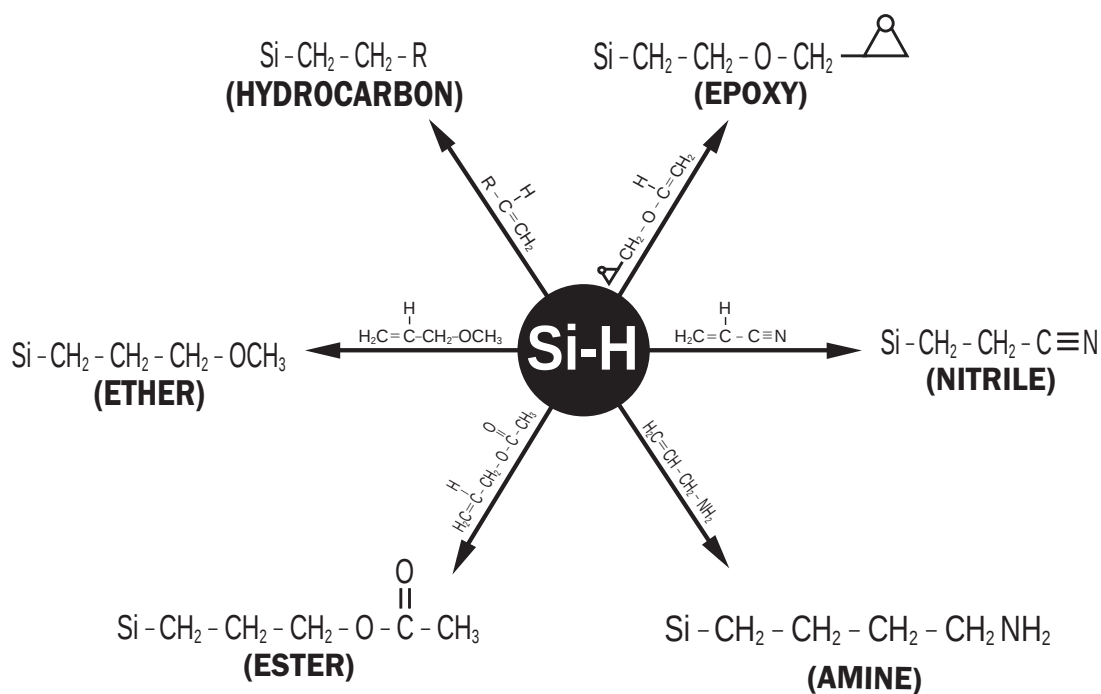
T2160

Tetravinyltetramethyl-
cyclotetrasiloxane

Chemistry of Addition Cure (Hydrosilylation) Reaction



Typical Hydrosilylation Addition Cure Reactions (Catalyzed by UCT PC065-PC088.3 Pt Catalysts)





Interested in learning more about platinum catalysts and their applications?

Call between the hours of 8:00 am to 5:00 pm eastern standard time or write for application help, recommendations, and trouble shooting from our experienced staff of silicone and catalyst chemists.

Ask about our platinum catalysts workshop.

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